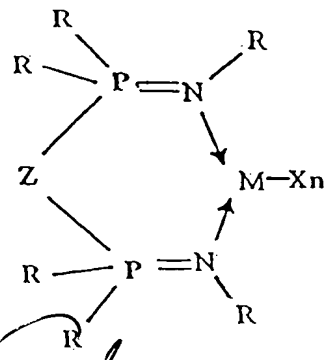
Claims:

1. A transition metal complex having the formula



FORMULA I

wherein M is Fe[II], Fe[III], Ni[II], Co[I], Co[II], Co[III], V[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III] orRu[IV]; Pd[II], V[III], V[IV] or V[V].

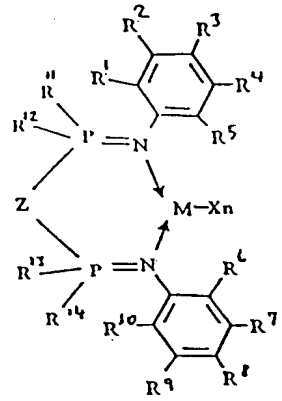
X represents an atom or group covalently or ionically bonded to the transition metal M;

R is independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl or substituted heterohydrocarbyl;

Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a C_1-C_4 alkylene group, a silyl or germyl group, and

n = an integer to satisfy the valency of M.

2. A transition metal complex having the formula:



wherein M is Fe[II], Fe[III], Ni[II], Co[I], Co[II], Co[III], V[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III], orRu[IV]; Pd[II], V[III], V[IV] or V[V].

X represents an atom or group covalently or ionically bonded to the transition metal M;

Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a C_1-C_4 alkylene group, a silyl or germyl group,

R^1 - R^{14} are independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl,or substituted heterohydrocarbyl, and

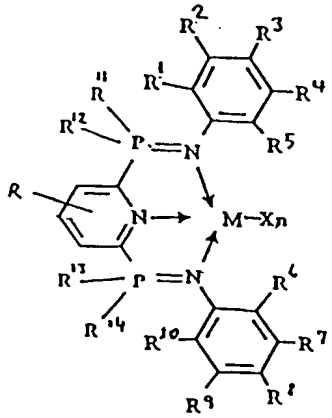
n = an integer to satisfy the valency of M.

3. A complex according to claim 2 wherein at least one of R^1 - R^{10} contains two or more carbon atoms.

4. A complex according to claim 2 wherein R^{11} - R^{14} are phenyl, alkyl or cycloalkyl.

5. A complex according to any of the preceeding claims wherein the bridging group Z is $-CH_2-$ or a donor atom N.

6. A complex according to any of the preceding claims having the formula



wherein M, X and R^1 - R^{14} and n are as claimed in claim 2, and R is hydrogen or hydrocarbyl.

7. A complex according to any of the preceeding claims wherein the metal M is Fe, Ni or Co.

8. A complex according to any of the preceeding claims wherein the group X is chloride.

9. A polymerisation catalyst comprising

(1) a transition metal complex as defined in any precceding claim, and

(2) an activating quantity of an activator compound.

10. A catalyst according to claim 9 whererin the activator compound is an organoaluminium compound or a hydrocarbylboron compound.

11. A catalyst according to claim 9 further comprising a neutral Lewis base.

12. A catalyst according to any of claims 9 to 11 further comprising a support.

13. A catalyst according to claim 12 whererin the support is silica, alumina, or zirconia or is a polymer or prepolymer.

14. A catalyst according to any of claims 9 to 13 further comprising a catalyst suitable for the polymerisation of olefins of the type used in conventional Ziegler-Natta catalyst systems, metallocene-based catalysts, monocyclopentadienyl- or constrained geometry based catalysts, or heat activated supported chromium oxide catalysts (eg Phillips-type catalyst).

15. A process for the polymerisation or copolymerisation of olefins comprising contacting a monomeric olefin under polymerisation conditions with a complex or catalyst as defined in any preceeding claim.

16. A process according to claim 15 wherein the polymerisation conditions are solution phase, slurry phase or gas phase.

17. A process according to claim 16 wherein the polymerisation is conducted under gas phase fluidised bed conditions.

18. A process according to claim 17 wherein the polymerisation is conducted under condensed mode.

19. A process according to any of claims 14-18 wherein hydrogen is used to control the average molecular weight of the polymer.

Add A2